

Claims

1. A fluid ejection cartridge, comprising:
a substrate carrier having a substrate receiving surface;
a substrate having at least one fluid ejector actuator disposed on said
5 substrate; and
a two-part adhesive disposed between said substrate and said
substrate receiving surface, wherein said two-part adhesive comprises:
an epoxy resin having a polyglycidyl ether of a polyhydric
phenol; and
10 a hardener having a cycloaliphatic polyamine.
2. The fluid ejection cartridge in accordance with claim 1, further
comprising at least one nozzle proximate to said at least one fluid ejector
actuator disposed over said substrate.
- 15 3. The fluid ejection cartridge in accordance with claim 2, wherein
said fluid ejector actuator further comprises a fluid energy generating element.
4. The fluid ejection cartridge in accordance with claim 3, wherein
20 activation of said fluid energy generating element ejects essentially a drop of
a fluid from said at least one nozzle, and the volume of the fluid, of essentially
said drop, is in the range of from about 5 femto-liters to about a 900 pico-
liters.
- 25 5. The fluid ejection cartridge in accordance with claim 4, wherein
said fluid energy generating element is a thermal resistor.
6. The fluid ejection cartridge in accordance with claim 4, wherein
said fluid energy generating element is a piezoelectric actuator.
- 30 7. The fluid ejection cartridge in accordance with claim 4, wherein
said fluid energy generating element is an acoustic actuator.

8. The fluid ejection cartridge in accordance with claim 1, further comprising a reservoir fluidically coupled to said at least one fluid ejector actuator.

5 9. The fluid ejection cartridge in accordance with claim 1, further comprising a fluid definition layer.

10 10. The fluid ejection cartridge in accordance with claim 9, wherein said fluid definition layer further comprises:
a chamber layer defining sidewalls of a chamber; and
an orifice layer defining a bore.

15 11. The fluid ejection cartridge in accordance with claim 10, further comprising fluid inlet channels formed in said substrate and fluidically coupled to said chamber.

12. The fluid ejection cartridge in accordance with claim 1, further comprising a cartridge body coupled to said substrate carrier.

20 13. The fluid ejection cartridge in accordance with claim 1, wherein said substrate carrier further comprises a ceramic chip carrier.

25 14. The fluid ejection cartridge in accordance with claim 1, further comprising a reservoir fluidically coupled to said substrate.

15. The fluid ejection cartridge in accordance with claim 1, wherein said fluid reservoir contains an ejectable fluid fluidically coupled to at least one nozzle.

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16. The fluid ejection cartridge in accordance with claim 1, further comprising:

at least one active device disposed on said substrate; and
an electrical trace electrically coupling said at least one active device to
5 said at least one fluid ejector actuator.

17. The fluid ejection cartridge in accordance with claim 16, wherein said active device further comprises a transistor.

10 18. The fluid ejection cartridge in accordance with claim 1, wherein said polyglycidyl ether of a polyhydric phenol is a glycidyl ether of bisphenol A.

15 19. The fluid ejection cartridge in accordance with claim 1, wherein said polyglycidyl ether of a polyhydric phenol is a glycidyl ether of bisphenol F.

20 20. The fluid ejection cartridge in accordance with claim 1, wherein said cycloaliphatic polyamine is 3-aminomethyl-3,5,5-trimethyl-1-cyclohexylamine.

21. The fluid ejection cartridge in accordance with claim 1, wherein said epoxy resin further comprises a resin selected from the group consisting of a bisphenol type epoxy resin, an epoxy novolac resin, an epoxy phenolic novolac resin, a cresol glycidyl ether, an aliphatic glycidyl ether having C8 to C18 alkyl groups, an alkyl glycidyl ether having C4 to C12 alkyl groups, a
25 polypropylene glycol based resin, a 1,4 butanediol diglycidyl ether, triglycidylether of trimethylolpropane, 4-glycidioxy-N,N-diglycidyl aniline, halogenated phenoxy epoxy resins, epoxyalkoxy resins, and mixtures thereof.

30 22. The fluid ejection cartridge in accordance with claim 1, wherein said hardener further comprises a hardener selected from the group consisting of 3-aminomethyl-3,5,5-trimethyl-1-cyclohexylamine, diethylenetriamine, triethylenetetramine, poly(oxypropylene diamine),

poly(oxypropylene triamine), polyglycolamine, m-phenylene diamine, 4,4'-diaminodiphenyl sulfone, 4,4'-diaminodiphenyl methane, N-aminoethylpiperazine, 1,2-diaminocyclohexane, 1,3-diaminocyclohexane, 1,4-diamino-3,6-diethylcyclohexane, 2,2-di(4-aminocyclohexyl) propane, di(4-aminocyclohexyl) methane, and mixtures thereof.

23. The fluid ejection cartridge in accordance with claim 1, wherein said two-part adhesive further comprises a thixotrope.

24. The fluid ejection cartridge in accordance with claim 23, wherein said thixotrope is selected from the group consisting of fumed silicas, clays, nanoclays, talcs, calcium carbonates, and mixtures thereof.

25. The fluid ejection cartridge in accordance with claim 1, wherein said two-part adhesive further comprises a silane coupling agent.

26. The fluid ejection cartridge in accordance with claim 25, wherein said silane coupling agent is in the range from about 0.2 weight percent to about 2.0 weight percent.

27. The fluid ejection cartridge in accordance with claim 1, wherein said two-part adhesive further comprises a filler.

28. The fluid ejection cartridge in accordance with claim 27, wherein said filler is added to adjust a mix volume ratio of said epoxy resin and said hardener in the range from about 4 to about 1.

29. The fluid ejection cartridge in accordance with claim 27, wherein said filler is added to adjust a mix volume ratio of said epoxy resin and said hardener in the range from about 1:1 to about 10:1.

30. The fluid ejection cartridge in accordance with claim 27, wherein said filler is selected from the group consisting of glass spheres, low density glass spheres, ceramic spheres, polymer spheres, barium sulfate, barium titanate, silicon oxide powder, amorphous silica, talc, clay, mica powder, and mixtures thereof

31. The fluid ejection cartridge in accordance with claim 1, wherein said two-part adhesive further comprises a pigment providing visual reference of proper mixing of said epoxy resin and said hardener.

32. The fluid ejection cartridge in accordance with claim 31, wherein said pigment is in the range from about 0.005 weight percent to about 1 weight percent.

33. A fluid ejection cartridge, comprising:
a substrate having means for ejecting a fluid;
means for supporting said substrate; and
means for adhering said substrate to said means for supporting said substrate.

34. The fluid ejection cartridge in accordance with claim 33, wherein said means for ejecting said fluid further comprises means for ejecting essentially a drop of said fluid, and the volume of said fluid is in the range of from about 5 femto-liters to about 900 pico-liters.

35. The fluid ejection cartridge in accordance with claim 33, further comprising:
means for forming a chamber; and
means for forming a nozzle.

36. The fluid ejection cartridge in accordance with claim 33, further comprising means for performing logic on said substrate.